REMARKS

Claims 1-5 are rejected. Independent claim 1 has been amended. Claims 1-5 are pending. Reconsideration of the above-identified application in view of the following remarks is respectfully requested.

Claims 1-5 stand rejected under 35 U.S.C. §112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In response, claim 1 has been amended to recite a first spin-forming step for applying a first predetermined spin to the optical-fiber drawn from the optical fiber preform via a first wheel in a first predetermined direction. In addition, claim 1 was amended to recite that the first wheel is twisted in a clockwise or counter clockwise direction perpendicular to the direction of the optical-fiber preform and that the a second spin-forming step for applying a second predetermined spin to the optical-fiber. Support for this amendment is found in the specification on page 9, line 7 to line 20.

Accordingly, applicants respectfully requests withdrawal of the rejections of claim 1 – 5 as claims now clearly points out the subject matter.

Claims 1- 5 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Evans et al (US 5,822,487) in view of Orita (US Pat Appl Pub. No. 2002/0134114) and Hart Jr. et al. (US 5,418,881). Applicants respectfully traverse this ground for rejection.

Claim 1, as amended, recites a method for drawing an optical fiber from an optical-fiber preform, the method comprising, *inter alia*, a first spin-forming step wherein said first spin-forming step is provided via a **first wheel** in a first predetermined direction that is perpendicular to a direction in which the first wheel is drawn, **so that a central axis of the optical-fiber preform coincides with a tilt axis of the first wheel inclined at a predetermined initial angle** θ_i and a second spin-forming step for applying a second predetermined spin to the optical-fiber via a **second wheel** in a second predetermined direction according to a predefined spin function **wherein the second wheel swings between a vertical inclination angle θ_{s1} and a vertical angle θ_{s2} with reference to the optical-fiber-drawing axis** provided after the **step of heating one end of the optical-fiber preform for melting and drawing the end of the optical-fiber preform**.

Applicant respectfully submits that Evans, Orita and Hart Jr. do not, either alone or in combination, show or teach the present invention as set forth in the above base claim.

Regarding the first reference, according to the Office Action, Evans suggests, although 'not explicitly', using more than one roller for twisting. Applicants have thoroughly reviewed Evans and respectfully submit that reference fails to hint, suggest or otherwise promote the use of a **second wheel** in a second predetermined direction according to a predefined spin function **wherein the second wheel swings between a vertical inclination angle θ_{s1} and a vertical angle θ_{s2} with reference to the optical-fiber-drawing axis**, as recited in the base claim.

Regarding the second reference, the Office Action indicates that Orita teaches a 'first and second wheel.' However, Orita, as read by applicants, provides two **stationary, non-tiling and non-swinging** reciprocating rollers along a center axis of rotation in opposite moving directions [0021]. Therefore, Orita fails to teach providing a first a first wheel ... so that a central axis of the optical-fiber preform coincides **with a tilt axis** of the first wheel **inclined at a predetermined initial angle** and second wheel wherein the second wheel **swings between a vertical inclination angle θ_{s1} and a vertical angle θ_{s2} with reference to the optical-fiber-drawing axis**, as recited base claim.

Regarding the third reference, Hart Jr. et al., (hereafter 'Hart'), applicants wish to note that Hart as well as Evans, discussed above were in fact disclosed in the back ground section of the applicant's specification (See page 2, line 19-20(disclosed as prior art in Henderson US 5,943,466) to indicate that the present invention provides improvements over those references. Hart teaches a 'first guide roller, 1911' (FIG. 3) in the **hot zone** of the optical-fiber preform for minimizing PMD and another 'guide roller, 1912' (FIG.. 4) **place "prior to take-up" in the spooling stage to avoiding re-spooling as a result of elastic twist in the fiber** (Col. 4, line 16-24; Col. 4, line 66-67). The present invention provides an improvement on a **single** spin-forming step disclosed in Hart, where:

> [a] spin is "impressed" on the fiber herein if fiber material in the **hot zone** is caused to be torsionally deformed, with that deformation being frozen into the fiber, such that the fiber exhibits a permanent "spin", i.e., a permanent torsionally deformation.

(Col. 2, line 45-56(citing "Internal Rotation of the Birefringence Axes in Polarization-Holding Fibers," M.J. Marrone et al., Optics Letters, Vol. 12, No. 1, January 1987 (pp. 60-62))(emphasis added).

The Office Action misunderstands the positioning and purpose of Hart's 'guide roller, 1912' and erroneously concludes that the 'guide roller, 1912' is equivalent to the second wheel and spin-forming step found in the base claim. Hart describes each roller; 'first guide roller, 1911' and 'guide roller, 1912' by distinguishing how the optical-fiber preform comprises a set of rollers for "guide means" and a set of rollers for "drive means" referring to FIG. 1 in region 21 and how the 'guide roller, 1912' promotes a reduction in elastic twist when the fiber is spooled on to the take-up reel (Col. 3, line 62-64; Col. 4, line 58-68; Col. 5, line 1-4). Therefore, Hart's 'guide roller, 1912' is actually positioned at a significantly different location in the optical preform (**"prior to take-up"** in the **spooling stage** not in the hot zone) and teaches a different operability than the present invent as admitted by the Office Action ("**prevent elastic twist in the fiber**" not minimizing PMD). The present invention minimizes Polarization-Mode Dispersion (PMD) by providing a first **and second wheel** and each respective spin-forming step, as described in the base claim, which are provided **after** the **step of heating one end of the optical-fiber preform for melting and drawing the end of the optical-fiber preform** to minimize PMD. Each spin-forming step in the present invention occurs where it can have an affect on PMD (where PMD can be minimized), in the so-called 'hot zone' or as described by applicant's in the **drawing process of the fabrication stage** (Page 2, line 12-13).

Therefore, Hart fails to teach providing a hint, suggest or otherwise promote the use of a **second wheel** in a second predetermined direction according to a predefined spin function **wherein the second wheel swings between a vertical inclination angle θ_{s1} and a vertical angle θ_{s2} with reference to the optical-fiber-drawing axis**, as recited in the base claim.

Accordingly, all three references, Evans, Orita and Hart fail to disclose a second wheel and spin-forming step as provided in the base claim. Moreover, the combination Evans, Orita and Hart do not, show or teach a **second wheel** in a second predetermined direction according to a predefined spin function **wherein the second wheel swings between a vertical inclination angle θ_{s1} and a vertical angle θ_{s2} with reference to the optical-fiber-drawing axis**, as recited in the base claim. The Office Action suggests the combination of Hart with Evans and Orita to "**prevent elastic twist in the fiber** as taught by Hart." Applicants respectfully submit that the combination of Hart with Evans and Orita fail to disclose or suggest the desirability of modifying the prior art such that the base claim would have been obvious to the artisan to achieve the present inventions objective of **minimize Polarization-Mode Dispersion (PMD)**. In fact, as admitted by the Office Action, the combination of references, Hart 'guide roller, 1912' with Evans and Orita teaches would not teach or suggest minimizing PMD, the objective of the present invention but would teaches "**prevent[ing] elastic twist in the fiber**."

As shown above, the present invention is not obvious in view of the cited references because, Evan, Orita nor Hart individually or in combination, discloses or suggests all the elements of the present invention. Moreover, even if Evan, Orita and Hart were combined, as suggested by the examiner, the combination would not perform the steps disclosed in claim 1. Therefore applicants respectfully request withdrawal of this ground of rejection.

The other claims in this application are each dependent from the independent claim discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of the patentability of each on its own merits is respectfully requested.

For all the foregoing reasons, it is respectfully submitted that all the present claims are patentable in view of the cited references. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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